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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,622	03/18/2004	John McCafferty	05569.0004.DVUS11	6206

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EXAMINER	
STEELE, AMBER D	

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/803,622	MCCAFFERTY ET AL.	
	Examiner	Art Unit	
	Amber D. Steele	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *1-8 and 10-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9 and 13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *March 18, 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. Claims 1-17 are currently pending.

Claims 9 and 13-17 are currently under consideration.

Election/Restrictions

2. Applicant's election without traverse of Group III (claims 9-17) in the reply filed on April 27, 2006 is acknowledged.

3. Claims 1-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 27, 2006.

4. Applicant's election without traverse of deriving the nucleotide sequences from peripheral blood lymphocytes as the species of deriving in the reply filed on April 27, 2006 is acknowledged.

5. Claims 10-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 27, 2006.

Priority

6. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) of United Kingdom application 9015198.6 7/10/1990; United Kingdom application 9022845.3 10/19/1990; United Kingdom application 9024503.6 11/12/1990; united kingdom application 9104744.9 3/6/1991; United Kingdom application 9110549.4 5/15/1991. The certified copies have been filed in parent Application No. 09/726,219, filed on November 28, 2000.

7. The priority for the present application is acknowledged as:

This application is a DIV of 09/726,219 11/28/2000 PAT 6,806,079 which is a CON of 08/484,893 06/07/1995 PAT 6,172,197 which is a CON of 07/971,857 01/08/1993 PAT 5,969,108 which is a National Stage application filed under 35 U.S.C. § 371 of PCT/GB91/01134 07/10/1991.

Information Disclosure Statement

8. The information disclosure statement filed March 18, 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein (where no copy was supplied) has not been considered.

9. The art cited in the IDS received on March 18, 2004 was found in prior applications 09/726,219; 08/484,893; and 07/971,857.

Drawings

10. The drawings/figures are objected to because tables and sequence listings included in the specification must not be duplicated in the drawings. See 37 CFR §1.58(a) and §1.83(a). Applicants are advised that upon issuance of a patent, the complete text of the sequence listing submitted in compliance with 37 CFR §§1.821-1.825 will be published as part of the patent. Applicants should amend the specification to delete any figures/drawings which consist only of nucleic acid or protein sequences which have been submitted in their entirety in computer readable format (e.g. as SEQ ID NOs:) and should further amend the specification accordingly to reflect the replacement of the drawing/figure by the appropriate SEQ ID NO:. Figures 4a, 10a, 10b, 10c, 16b, 24a, 24b, 44a, 44b, and 52 contain sequences which are listed in the sequences listing. The figures do not contain any additional information which is not provided in the sequence listing.

Appropriate correction is required.

Specification

11. The abstract of the disclosure is objected to because the abstract contains 27 lines and approximately 196 words. Correction is required. See MPEP § 608.01(b).

12. The disclosure is objected to because of the following informalities: On page 73, lines 20-27, the description of the drawings states:

"Figures 25a-26b shows a matrix of ELISA signals for clones derived from random combinatorial library. Designation of the clones is as in figure 24. The number of clones found with each combination is shown by the numerals.

Figure 26A shows the phagemid PHENI a derivative of pUC119 described in example 24: and the cloning sites in the phagemid PHEN."

However, Figure 26b depicts a portion of the sequence of pUC119 and not an ELISA matrix. Furthermore, Figure 25a is not present in the Drawings.

Appropriate correction is required.

Claim Interpretation

13. The presently claimed invention is directed to:

A method comprising:

i. producing a population of filamentous bacteriophage particles surface displaying binding molecules consisting of a dAb fragment and wherein the filamentous bacteriophage particle contains nucleic acid sequences encoding the binding molecule, and

ii. selecting for a filamentous bacteriophage particle surface displaying a binding molecule via contacting the filamentous bacteriophage particle surface displaying a binding molecule with a target epitope or an antigen.

The limitation that the binding molecules have a range of binding specificities is considered to be a functional limitation. In addition, the limitation that the nucleic acid sequence encodes the binding molecule is considered to be a functional limitation. Furthermore, the

limitation that the binding molecules bind the target epitope or antigen is considered to be a functional limitation.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

15. Claims 9 and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Dower et al. U.S. Patent 5,427,908 filed May 1, 1990.

For present claim 9, Dower et al. teach methods of producing filamentous bacteriophage surface expressing binding domains of antibodies including antibody fragments, VH, and VL (e.g. Ab fragments) that are encoded by nucleic acid sequences and screening the libraries of filamentous bacteriophage expressing the antibody fragments against various antigens, antigenetic determinants, or haptens in order to select a specific binding domain (please refer to abstract; columns 1-12; Example I; claims 1-4 and 7-17).

For present claim 15, Dower et al. teach that the nonbound antibodies are washed away and the bound phage can be eluted from the antigen or hapten (please refer to column 10, lines 62-67; column 11, column 12, lines 1-23).

For present claim 16, Dower et al. teach that the previously antigen or hapten bound phage are recovered (please refer to column 11, lines 60-67; column 12, lines 1-31).

For present claim 17, Dower et al. teach recloning DNA from the eluted and recovered previously antigen or hapten bound phage particles via expression in a suitable eukaryotic or prokaryotic expression vector for production of large amounts of the binding domain protein (please refer to column 12, lines 32-41).

Therefore, the present invention is anticipated by the teachings of Dower et al.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ladner and Guterman WO 90/02809 published March 22, 1990 and Ladner et al. WO 88/06630 published September 7, 1988.

For present claim 9, Ladner and Guterman teach methods of surface displaying binding domains on filamentous bacteriophage particles wherein the binding domains are encoded by nucleic acid sequences and then screened via binding to targets (please refer to abstract; pages 8-14; pages 17-18; pages 42-48).

However, while Ladner and Guterman discuss antibodies and antibody fragments, the expression of antibody fragments on the surface of filamentous phage is not expressly conveyed.

For present claim 9, Ladner et al. teach methods of surface displaying SCADs or single-chain antibodies (e.g. Ab fragments) on the surface of Lamda phage and screening the SCADs against antigens (please refer to abstract; pages 2-6; Example 1; Figures 1-5).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to alter the methods of screening filamentous phage displaying proteins of Ladner and Guterman with the SCADs or antibody fragments of Ladner et al.

One having ordinary skill in the art would have been motivated to do this because Ladner et al. teach that methods are needed to facilitate screening of antibody molecules to be more readily identified, recloned, and expressed (please refer to column 1, lines 25-48).

One of ordinary skill in the art would have had a reasonable expectation of success in the modification of the methods of screening filamentous phage displaying proteins of Ladner and Guterman with the SCADs or antibody fragments of Ladner et al. because Ladner and Guterman et al. teach screening methods of phage-displayed proteins that are between 46 and 164 residues in length (e.g. VH and VL are approximately 100-120 residues in length; please refer to page 50, lines 29-35).

Therefore, the modification of the methods of screening filamentous phage displaying proteins of Ladner and Guterman with the SCADs or antibody fragments of Ladner et al. render the instant claim *prima facie* obvious.

Double Patenting

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection

is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 9 and 14-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 14-16, 19, 23-24, 33-35, 38-40, 44-48, and 52-56 of U.S. Patent No. 5,969,108. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the present application and U.S. Patent 5,969,108 claim methods of producing binding molecules (e.g. members of a specific binding pair) via producing or expressing the binding molecules on the surface of filamentous phage (e.g. bacteriophage particles) and selecting or screening the surface displayed binding molecules for binding or affinity for targets (e.g. antigen, epitope, binding pair member).

For present claim 9 (first step), U.S. Patent 5,969,108 claims methods of producing member of a specific binding pair (e.g. binding molecule) comprising a binding domain of an antibody (e.g. Ab fragment) by expressing a nucleic acid sequence that encodes a specific binding pair member in order to display the binding pair member on the surface of a filamentous phage (please refer to claims 1-4).

For present claim 9 (second step), U.S. Patent 5,969,108 claims methods of producing member of a specific binding pair (e.g. binding molecule) comprising selecting or screening by affinity (e.g. specific binding) for a member complementary to the specific binding pair member which can be antigens (please refer to claims 14-15, 33-34, 44-45, and 52-53 and the specification for a definition of complementary binding pair members column 11, lines 1-3).

For present claim 14, U.S. Patent 5,969,108 claims helper phage which can be phagemid (please refer to claims 4-5 and specification for a definition of helper phage column 12, lines 56-63).

For present claims 15 and 16, U.S. Patent 5,969,108 claims recovering the phages via elution (please refer to claims 16 and 35).

For present claim 17, U.S. Patent 5,969,108 claims methods of utilizing the nucleic acid sequence from a selected or screened phage to express a specific binding pair member via recombinant techniques (please refer to claims 19, 23-24, 38-40, 46-48, and 54-56).

Therefore, the methods as claimed in U.S. Patent 5,969,108 render the present claims *prima facie* obvious.

20. Claim 9 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 and 9-15 of U.S. Patent No. 5,885,793. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the present application and U.S. patent 5,885,793 claim methods of obtaining (e.g. producing) a specific binding pair member (e.g. binding molecule) via libraries (e.g. populations) of filamentous bacteriophage surface displaying the specific binding pair member comprising

antibody light chain and heavy chain (e.g. Ab fragment) encoded by nucleic acid and selecting by binding antigen.

For present claim 9, U.S. Patent 5,885,793 claims a method of obtaining a member of a specific binding pair (e.g. binding molecule) via providing a library of filamentous bacteriophage surface displaying the member of a specific binding pair comprising antibody light and heavy chains (e.g. Ab fragment) encoded by nucleic acid and selecting by biding with antigen (please refer to claims 1-6 and 9-15). In addition, U.S. Patent 5,885,793 claims methods of providing including producing and expressing a member of a specific binding pair in a filamentous bacteriophage (please refer to claims 2-3).

Therefore, the methods as claimed in U.S. Patent 5,885,793 render the present claim *prima facie* obvious.

21. Claims 9 and 17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-40 of U.S. Patent No. 6,521,404. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the present application and U.S. Patent No. 6,521,404 claim methods of producing a member of a specific binding pair (e.g. binding molecule) surface displayed on filamentous bacteriophage comprising VH and VL (e.g. Ab fragment) encoded by nucleic acid and selecting specific binindg pair members via binding antigen.

For present claim 9, U.S. Patent No. 6,521,404 claim a method of producing a member of a specific binding pair (e.g. binding molecule) by producing (e.g. providing and expressing) a library (e.g. population) of filamentous bacteriophage particles surface displaying VL and VH

(e.g. Ab fragment) encoded by nucleic acid and selecting one or more binding pair members by binding antigen (please refer to claims 1-8).

For present claim 17, U.S. Patent No. 6,521,404 claim methods of producing a specific binding pair member (e.g. binding molecule) via expression of a nucleic acid derived from the method of producing a member of a specific binding pair of claim 1 (please refer to claims 9-40).

Therefore, the methods as claimed in U.S. Patent 6,521,404 render the present claim *prima facie* obvious.

22. Claims 9 and 13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 6,555,313. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the present application and U.S. Patent 6,555,313 claim methods of obtaining (e.g. producing) a member of a specific binding pair (e.g. binding molecule) comprising variable light and heavy chains (e.g. Ab fragment) surface displayed on a filamentous bacteriophage and encoded by nucleic acid and selecting via binding antigen.

For present claim 9, U.S. Patent 6,555,313 claims a method of obtaining (e.g. producing) a member of a specific binding pair (e.g. binding molecule) comprising variable light and heavy chains (e.g. Ab fragment) surface displayed on a filamentous bacteriophage and encoded by nucleic acid wherein the method comprises producing a filamentous bacteriophage library and selecting one or more specific binding pair members via binding antigen (please refer to claims 1-20).

For present claim 13, U.S. Patent 6,555,313 claims nucleic acid is derived from mRNA of peripheral blood lymphocytes (please refer to claims 21-22).

Therefore, the methods as claimed in U.S. Patent 6,555,313 render the present claim *prima facie* obvious.

23. Claim 9 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over U.S. Patent Nos.6,582,915; 6,544,731; 6,593,081; and 6,916,605. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claims and the claims of the previously mentioned U.S. Patents claim methods of making binding molecules that are antibody fragments displayed on the surface of phage and encoded by nucleic acids wherein the binding molecules are selected. Applicants are requested to provide information for any additional U.S. Patents or U.S. Patent applications that may be considered art under nonstatutory obviousness-type double patenting.

24. Claims 9, 14, 15, 16, 17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 of copending Application No. 10/803,653. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the present application and U.S. Patent Application 10/803,653 claim methods of producing a binding molecule specific for a particular target (e.g. epitope or antigen), which method comprises the steps of: producing a population of filamentous bacteriophage particles displaying at their surface a population of binding molecules having a range of binding specificities, wherein each binding molecule in the population of

binding molecule in the population of binding molecules has a binding domain able to bind a target and the population of binding molecules has a range of binding specificities, and wherein each filamentous bacteriophage particle contains nucleic acid with a nucleotide sequence encoding the binding molecule expressed from the nucleic acid and displayed by the particle at its surface; selecting for a filamentous bacteriophage particle displaying a binding molecule with a desired specificity by contacting the population of filamentous bacteriophage particles with a target (e.g. epitope or antigen) so that individual binding molecules displayed on filamentous bacteriophage particles with the desired specificity bind to said target.

For present claim 9, U.S. Patent Application 10/803,653 claims a method of producing a binding molecule specific for a particular target (e.g. epitope or antigen), which method comprises the steps of: producing a population of filamentous bacteriophage particles displaying at their surface a population of binding molecules having a range of binding specificities, wherein each binding molecule in the population of binding molecule in the population of binding molecules has a binding domain able to bind a target and the population of binding molecules has a range of binding specificities, and wherein each filamentous bacteriophage particle contains nucleic acid with a nucleotide sequence encoding the binding molecule expressed from the nucleic acid and displayed by the particle at its surface; selecting for a filamentous bacteriophage particle displaying a binding molecule with a desired specificity by contacting the population of filamentous bacteriophage particles with a target (e.g. epitope or antigen) so that individual binding molecules displayed on filamentous bacteriophage particles with the desired specificity bind to said target (please refer to claim 1).

For present claim 14, U.S. Patent Application 10/803,653 claims a phagemid genome (please refer to claim 1).

For present claim 15, U.S. Patent Application 10/803,653 claims separating bound filamentous bacteriophage particles from the target (please refer to claim 2).

For present claim 16, U.S. Patent Application 10/803,653 claims recovering separated filamentous bacteriophage particles displaying a binding molecule with the desired specificity (please refer to claim 3)

For present claim 17, U.S. Patent Application 10/803,653 claims producing in a recombinant system by expression from nucleic acid derived from said separated particles the binding molecule, or a fragment or derivative thereof with binding specificity for the target, separate from filamentous bacteriophage particles (please refer to claim 4).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Future Communications

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amber D. Steele whose telephone number is 571-272-5538. The examiner can normally be reached on Monday through Friday 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ADS
June 19, 2006

PETER PARAS, JR.
PRIMARY EXAMINER

SPE1639